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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/537,354	06/06/2005	Chih-Chang Chu	CHUC3006	2654
23364 7590 07/12/2007 BACON & THOMAS, PLLC 625 SLATERS LANE FOURTH FLOOR ALEXANDRIA, VA 22314			EXAMINER HEINCER, LIAM J	
			ART UNIT 1709	PAPER NUMBER
			MAIL DATE 07/12/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/537,354

Applicant(s)

CHU ET AL.

Examiner

Liam J. Heincer

Art Unit

1709

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 June 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☒ Claim(s) 1-4 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>8/2005</u> | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Claim Objections

Claims 1-4 are objected to because of the following informalities: There is a typo in claim 1, line 6. It reads "isopropylacrylamide" rather than "isopropylacrylamide".

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 2-4 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Considering Claim 2: Claim 2 recites the limitation "the method of claim 1" in line 1. There is insufficient antecedent basis for this limitation in the claim.

For the purpose of further examination the claim is being interpreted as reading "the hydrogel". The claim is being interpreted as a composition claim as it contains no positive process steps.

Considering Claim 3: Claim 3 recites the limitation "the hydrogel of claim 2" in line 1. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al. (US Pat. 6,486,213) in view of Kim et al. (WO 00/12619).

Considering Claims 1 and 2: Chen et al. teaches a hydrogel (19:62-65) that is responsive to pH and temperature changes (3:67-4:3) comprising from 20 to 65% by weight (Table 4) a carboxyl group containing polysaccharide (15:17-22) and from 80 to 35% by weight (Table 4) N-isopropylacrylamide (12:35-38) with the total of the dextran maleic acid monoester and N-isopropylacrylamide being 100%.

Chen et al. does not teach the polysaccharide as being a dextran-maleic acid monoester. However, Kim et al. teaches using a dextran-maleic acid monoester in a hydrogel (pg. 5, ¶5). Chen et al. and Kim et al. are combinable as they are concerned with the same field of endeavor, namely hydrogels. It would have been obvious to a person having ordinary skill in the art at the time of the invention to have used the dextran-maleic acid monoester of Kim et al. in the hydrogel of Chen et al. and the motivation to do so would have been, as Kim et al. suggests, the excellent solubility of the dextran-maleic acid monoesters (pg. 8, ¶1).

Chen et al. does not teach photo cross-linking the hydrogel. However, Kim et al. teaches photo cross-linking a hydrogel (pg. 9, ¶1). It would have been obvious to a person having ordinary skill in the art at the time of the invention to have photo cross-linked the hydrogel of Chen et al. as in Kim et al. and the motivation to do so would have been, as Kim et al. suggests, to produce gelatin and to increase stability (pg. 9, ¶8).

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Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al. (US Pat. 6,486,213) in view of Kim et al. (WO 00/12619).

Considering Claim 5: Chen et al. teaches a hydrogel forming system (19:62-65) comprising from 10 to 75% by weight (Table 4) a carboxyl group containing polysaccharide (15:17-22) and from 90 to 25% by weight (Table 4) N-isopropylacrylamide (12:35-38) with the total of the dextran maleic acid monoester and N-isopropylacrylamide being 100%.

Chen et al. does not teach the polysaccharide as being a dextran-maleic acid monoester. However, Kim et al. teaches using a dextran-maleic acid monoester as a hydrogel precursor (pg. 5, ¶5). It would have been obvious to a person having ordinary skill in the art at the time of the invention to have used the dextran-maleic acid monoester of Kim et al. in the hydrogel of Chen et al. and the motivation to do so would have been, as Kim et al. suggests, the excellent solubility of the dextran-maleic acid monoesters (pg. 8, ¶1).

Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al. (US Pat. 6,486,213) in view of Kim et al. (WO 00/12619) as applied to claim 2 above, and further in view of the evidence presented by Lewis (Hawley's Condensed Chemical Dictionary).

Chen et al. teaches the basic composition of claim 2 as stated above.

Considering Claim 3: Chen et al. does not teach the dextran-maleic acid monoester as having an average degree of substitution ranging from 0.85 to 0.95 and a weight average molecular weight ranging from 65,000 to 75,000 on a dextran basis. However, Kim et al. does teach a dextran-maleic acid monoester having an average degree of substitution ranging from 0.85 to 0.95 and a weight average molecular weight ranging from 65,000 to 75,000 on a dextran basis (pg. 6, ¶3). It would have been obvious to a person having ordinary skill in the art at the time of the invention to have used a dextran-maleic acid monoester having the specifications of Kim et al. in the hydrogel of Chen et al. and the motivation to do so would have been, as Kim et al. suggests, to

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provide a hydrogel for encapsulation of virus (pg. 7, ¶5) and, as Lewis suggests, the molecular weight is the clinical standard (¶1).

Considering Claim 4: Chen et al. teaches a lower critical solution temperature which is less than or near body temperature (11:51-55).

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See PTO form 892.

Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Liam J. Heincer whose telephone number is 571-270-3297. The examiner can normally be reached on Monday thru Friday 7:30 to 5:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Eashoo can be reached on 571-272-1197. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

LJH


MARK EASHOO, PH.D.
SUPERVISORY PATENT EXAMINER

10/ Jul 107

July 6, 2007